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## **Research Article**

### **Knowledge, Attitude and Practices on Medication Error Reporting among Health Practitioners from Hospitals in Manila**

**Rogie Royce Carandang\*, Danica Resuello, Grace Beatrice Hocson, Kristle Mae Respicio, Chariz Reynoso**  
College of Pharmacy, Adamson University, City of Manila, Philippines

**\*Corresponding author**

Rogie Royce Carandang

Email: [rrcarandang@gmail.com](mailto:rrcarandang@gmail.com)

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**Abstract:** Medication errors are considered to be serious threats to patient's safety. Effective medication error reporting is a necessary tool to prevent and reduce its occurrence. This study was conducted to determine and compare the knowledge, attitude and practices (KAPs) on medication error reporting among health practitioners from hospitals in Manila. 180 health practitioners, consisting of physicians, nurses and pharmacists were included in the study. Comparison between their knowledge, attitude and practices with their demographics was also made. The results showed that 72% of health practitioners were not knowledgeable on medication error reporting. The pharmacists have the highest proportion (38%) of knowledgeable respondents. Majority of the health practitioners (58%) were classified to have unfavorable attitude towards medication error reporting. Only the pharmacists have higher proportion of respondents (52%) with favorable attitude. More than half of the respondents (52%) are practicing medication error reporting. Among other variables, the age and frequency of encounter with medication errors affected the respondents' knowledge while the manner of reporting affected their practices. Based on the results, it can be concluded that an improvement in medication error reporting system is still needed. Strengthening education about reporting is one of the ways to do such. Reporting system that may encourage health practitioners to report without having any doubt must also be established properly in hospitals to be able to improve patient care.

**Keywords:** medication error, reporting, knowledge, attitude, practices, health practitioners, hospitals.

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## **INTRODUCTION**

Health care professionals are the people who provide health care services to patients. These professionals portray different roles in providing medication to patients. The physician orders the medication, the pharmacist prepares the medication, and the nurse administers the medication [1].

Medication error is any preventable drug event leading to inappropriate medication use or patient harm. Experts have estimated that more than one million serious medication errors happen annually in hospitals alone [2]. It can be an error in prescribing, dispensing, or administering of drug, irrespective of whether such errors lead to adverse consequences or not. Good and effective medication error reporting system is a necessary tool to evaluate and to take appropriate actions towards medication errors. Thus, preventing or reducing harm to the patients.

In the Philippines, there is no national medication error reporting system. Therefore, the clinical and economical impact of medication errors is unknown. The absence of statistical data on medication errors in the Philippines is a big hindrance in the

creation of a solid recommendation on policy changes in order to achieve a safer environment for medication users. Health practitioners are responsible for identifying contributing factors to medication errors and taking proper measure to reduce their occurrence. The KAPs of health practitioners affect their way of reporting medication errors.

The overall goal of this study was to evaluate the culture of medication error reporting among health practitioners in Manila. Specifically, the KAPs towards medication error reporting will be determined and compared. Confounding variables that may affect the degree of reporting such as age, gender, years of experience, work environment and history of medication error was also assessed. This would lead to the creation or improvement of existing policies that will promote patient safety as a whole.

## **METHOD**

### **Research Design**

A qualitative cross-sectional design was used for this study concerning KAPs on medication error reporting among health practitioners from hospitals in Manila. Survey questionnaire was utilized to gather

information from concerned respondents at single point in time.

### Research Setting

The study was carried out in the City of Manila. It is the capital of the Philippines and is one of the sixteen cities of the National Capital Region (NCR), which is the largest region in the Philippines in terms of number of practicing health care professionals.

Manila has 6 legislative districts and consists of 14 geographical districts. 1.87% of the country's population resides in Manila and it is the second most densely populated city in the Philippines [3]. As of December 31, 2014, there are 28 hospitals in Manila, 17 are private and 11 are government-owned [4].

### Sampling Design and Sample Size

A total of 180 health practitioners consisting of physicians, nurses and pharmacists, all working hospital-based in Manila, were randomly selected as respondents for the survey. 60 samples per profession were asked to answer the survey questionnaires with the aim to evaluate their current KAPs on medication error reporting.

### Research Instrument and Measurement

A survey questionnaire was used to gather information from the concerned physicians, nurses and pharmacists. The questionnaire was adapted from questionnaires of different journals about medication error. These were used instead of constructing our own to ensure reliability of the questionnaire and to allow comparison of results with previous studies. Some modifications, however, were done to narrow down the investigation to just three categories for knowledge, attitude and practices assessment and also to fit the Philippine setting. Content validity was ensured by obtaining suggestions from qualified professionals. Further modifications were done to the questionnaire according to the suggestions. The procedures and purposes of the medication error reporting system in the Philippines were used to determine knowledge while attitudinal queries were limited to the motivations to reporting medication errors and to factors that may discourage them from reporting. The different practices of the health practitioners were also included.

The questionnaire was divided into four sections. Corresponding sections were used to obtain the demographics of the health practitioners, to get information about their knowledge of medication error reporting, to identify their attitudes to reporting and to know their experience and practices with medication error reporting.

### Section A

#### Socio-Demographic Profile

Demographic characteristics included in the study are age, gender, years of experience, work environment, and history of medication error.

### Section B

#### Knowledge on Medication Error Reporting

Ten questions on knowledge were assessed by two options (yes/no). Health practitioners who correctly answered 10 items were classified as knowledgeable and those getting scores below 10 were considered as non-knowledgeable.

### Section C

#### Attitude on Medication Error Reporting

Health practitioners' attitudes toward medication error reporting were gauged on a 5-point likert's scale, ranging from 'strongly agree' to 'strongly disagree'. Their responses were summated and health practitioners who got a score of 40 - 50 were considered to have favorable attitude towards medication error reporting whereas those scoring 10 - 39 were classified as having unfavorable attitude.

### Section D

#### Practices on Medication Error Reporting

The final section inquired about the health practitioners' identification and actual reporting of a medication error which were answered by a 5-point likert's scale, ranging from 'always' to 'never'. Their responses were summated and health practitioners who got a score of 40 - 50 were considered to be practicing medication error reporting whereas those scoring 10 - 39 were considered to be not practicing medication error reporting.

### Reliability Test

In order to assure the reliability of the instrument developed by the researchers, the research instrument was subjected to a validation through pilot study by at least 30 randomly selected health practitioners. These initial respondents were short so that they could extract in the actual survey. After the collection of data, the questionnaire underwent Chronbach alpha to measure how well a set of variables or items measures a single, one dimension latent construct through the expertise of a statistician. The questionnaire intended to answer the knowledge, attitude and practices on medication error reporting among health practitioners yielded a reliability result of 0.863.

### Data Collection

A letter of request was forwarded to the chief of clinics of the hospital to seek permission for the conduct of survey. After getting the approval from the hospital, the health practitioners who received the questionnaires were notified by mail or telephone one week before being hand-delivered the questionnaires. This allowed the health practitioners to fit into their schedule the completion of the questionnaire which was brought to them personally by one of the investigators and was retrieved on the same day.

### Data Analysis

Analysis of the responses to the questionnaire was carried out using the Statistical Package for the Social Sciences (SPSS for MS Windows version 17). Cross-tabulation of variables was examined using the Chi-square test distribution accepting  $P < 0.05$  as significant. This encompassed analyses on the level of KAPs on medication error reporting of health practitioners namely physicians, nurses and pharmacists. Frequency and percentage were used to analyze the demographic data of the health practitioners namely age, gender, years of practice, work environment, and history of medication error encountered. Pearson chi-square test was used to relate demographics with their KAPs on medication error reporting.

## RESULTS AND DISCUSSION

### Knowledge on medication error reporting

Table-1 shows that only 28% of health practitioners are knowledgeable on medication error reporting while the rest of the 72% are said to be non-knowledgeable. Statistical test results revealed that the knowledge among these health practitioners differ significantly. It was the pharmacists who gathered the

highest percentage (38%) of knowledgeable respondents, followed by the physicians (35%) and lastly by the nurses (12%). These health practitioners are not knowledgeable enough about medication error reporting despite the fact that majority of them have already encountered medication error. It might be because they are not properly oriented with the system of medication error reporting they have in their hospital.

The lack of knowledge appeared to be a persistent problem. Leape identified system failures that underlie medication errors [5]. He involved doctors, nurses, and pharmacists in the study. Results indicated that the most common system failure was lack of drug knowledge specifically, in the administration of medications by nurses. On the other hand, in the study conducted by Osborne *et al.*, he found that 15.8% of the nurses were unsure as to what situation constituted a medication error, and 14% were not sure when to report the error [6]. This implies that pharmacists, being regarded as drug experts, have more advantage when it comes to information about drugs thus, increased ability to identify more medication errors. This can be attributed to their greater knowledge regarding medication error reporting.

**Table-1: Respondents' knowledge on medication error reporting**

Knowledge	Physicians		Nurses		Pharmacists		Total		$\chi^2$ Sig
	n	%	n	%	n	%	n	%	
Knowledgeable	21	35	7	12	23	38	51	28	33.8 0.000
Non-Knowledgeable	39	65	53	88	37	62	129	72	
Total	60	100	60	100	60	100	180	100	Significant

### Attitude on medication error reporting

Table-2 presents the respondents' attitude on medication error reporting. More than half (58%) of the health practitioners have unfavorable attitude towards reporting. Statistical test results revealed that there was a significant difference among health practitioners' attitude towards medication error reporting. The pharmacists have more favorable attitude (52%) as compared with the physicians (40%) and nurses (35%).

Sarvadikar *et al.* evaluated the attitude of health practitioners on reporting medication error. The results showed that doctors were unlikely to report less-serious medication errors. Nurses and pharmacists were likely to report less-serious as well as serious medication errors despite their fears of receiving disciplinary action [7]. On the other hand, in the study conducted by Cook, he stated that the pharmacists were more confident in their ability to recognize error making them more willing to report medication errors [8]. Moreover, according to Hartnell *et al.*, health practitioners would be more willing to report

medication errors if reporting were made easier, if they were adequately educated about reporting, and if they received timely feedback [9].

Therefore, health practitioners are unlikely to report medication error for the reason that they think committing medication error would lose their credibility as professionals. Attitude of health practitioners are vital to make medication error reporting accepted and practiced through the health care system. It was previously recognized that pharmacist are more knowledgeable on medication error reporting, with that, they also possess favorable attitude towards reporting medication errors. Education of pharmacists about drug information makes them feel more confident to report any medication errors. On the other hand, nurses have the least number of respondents possessing favorable attitudes. This is mainly because reporting medication errors remain dependent on the nurse's ability to detect medication errors that has occurred [10]. This implies that lack of knowledge is associated with their attitude towards medication error reporting.

**Table-2: Respondents' attitude on medication error reporting**

Attitude	Physicians		Nurses		Pharmacists		Total		$\chi^2$ Sig
	n	%	n	%	n	%	n	%	
Favorable	24	40	21	35	31	52	76	42	4.356 0.04
Unfavorable	36	60	39	65	29	48	104	58	
Total	60	100	60	100	60	100	180	100	Significant

**Practices on medication error reporting**

Table-3 shows that there was no significant difference in the practice of health practitioners on medication error reporting. Despite the results of the survey that health practitioners are not knowledgeable

and possessing unfavorable attitude, still it showed that they are practicing medication error reporting. Hence, health practitioners consider medication error reporting as their professional obligation.

**Table-3: Respondents' practices on medication error reporting**

Practices	Physicians		Nurses		Pharmacists		Total		$\chi^2$ Sig
	n	%	n	%	n	%	n	%	
Practicing	29	48	32	53	32	53	93	52	0.200 0.66
Not Practicing	31	52	28	47	28	47	87	48	
Total	60	100	60	100	60	100	180	100	Not significant

**Relationship of respondents' demographics with their KAPs on medication error reporting**

Table-4 shows the relationship of respondents' demographics to their KAPs on medication error reporting. Variables such as age, gender, years of hospital experience, years of experience in the profession, work environment, frequency of medication error encountered and manner of reporting were analyzed. A *P* value of less than 0.05 is considered to be significant.

**Age**

Only the knowledge of health practitioners towards medication error reporting is said to be significantly related to their age. Their attitude and practices toward reporting were not affected by their age. There is a limited data concerning the relationship of age with knowledge of health practitioners on medication error reporting. However, based on the results, it shows that the middle-aged group, ages 35 – 50 years old has the most number of knowledgeable respondents. This implies that the knowledge on medication error reporting improves as the practitioner gets older because they obtain more information and experience.

**Gender**

The gender of the health practitioners has no significant relationship with their KAPs on medication error reporting. This implies that the gender, whether male or female, does not strongly influence their KAPs towards reporting.

**Years of Hospital experience**

The KAPs of health practitioners towards medication error reporting are not significantly related to the years

of hospital experience. This finding was supported by the results of the study conducted by Armutlu *et al.* Good medication error reporting behavior was noted, with no differences between all comparative groups within both years of experience and unit of practice [11]. This seems to indicate that no matter how long or short the years of experience in the hospital, the health practitioner's KAPs towards medication error is unaffected.

**Years of experience in the profession**

The years of experience in the profession did not have any influence to the KAPs of health practitioners towards medication error reporting. According to a study conducted by Mayo *et al.*, there was a weak relationship between percentages of errors perceived reported and the years of practice in profession [10]. This means that the length of professional practice does not affect the KAPs on medication error reporting.

**Work environment**

The work environment, regardless of how many patients were seen per day, did not show any significant relationship with the health practitioners' KAPs on medication error reporting. According to Chiang *et al.*, there is only a weak relationship with the work environment of health practitioners with their KAPs on medication error reporting [12]. This implies that no matter how busy the environment of the health practitioners is, their KAPs on medication error reporting are not affected.

**Frequency of medication error encountered**

Knowledge on medication error reporting is said to be significantly related to the frequency of encounter of medication errors of the respondents. Cross tabulation

shows that those who report medication errors daily are the most knowledgeable about medication error reporting. This implies that as health practitioners encounter medication errors, they could recognize their mistakes and become more aware and knowledgeable about the errors made. However, it is worth noting that the frequency of medication error encountered has nothing to do with their attitude and practices of reporting. Only their knowledge was improved by the frequency of encountering medication errors.

### Manner of reporting

The manner of reporting medication errors has a significant relationship with the practices of the health practitioners. It was already mentioned that all health practitioners are practicing medication error reporting and there was no significant difference in their way of practice. This implies that the more they report medication errors, the more they practice their professional obligation of ensuring patients' safety and well-being.

**Table-4: Relationship of respondents' demographics with their KAPs on medication error reporting**

Confounding Variable		Knowledge		Attitude		Practices	
		Pearson $\chi^2$	Sig	Pearson $\chi^2$	Sig	Pearson $\chi^2$	Sig
<b>Age (years)</b>	<b>n</b>						
< 35	98	7.370	0.03*	3.006	0.22	1.279	0.53
35-50	61						
> 50	21						
<b>Gender</b>							
Male	39	0.178	0.67	4.010	0.05	0.173	0.68
Female	141						
<b>Years of Hospital experience</b>							
Less than 5	108	1.080	0.90	4.388	0.36	5.948	0.20
5-10 years	25						
11-15 years	14						
16-20 years	14						
More than 20	19						
<b>Years of Experience in Profession</b>							
Less than 5	80	5.543	0.24	0.976	0.91	4.361	0.36
5-10 years	34						
11-15 years	29						
16-20 years	18						
More than 20	19						
<b>Work environment (patients/day)</b>							
< 20	75	2.842	0.24	1.409	0.49	1.595	0.45
21-40	59						
> 40	46						
<b>Frequency of medication error encountered</b>							
None	32	13.197	0.04*	6.577	0.36	0.284	1.00
Daily	8						
Once a week	13						
Once a month	23						
Once in 3 months	43						
Once a year	35						
Twice a year	26						
<b>Manner of reporting</b>							
Never	29	4.420	0.35	1.190	0.88	10.20	0.04*
Rarely	25						
Sometimes	19						
Often	29						
Always	78						

\* P value is significant i.e < 0.05

## CONCLUSIONS

The results of the study revealed a need for improvement on the health practitioner's basic knowledge on medication error reporting. This is evident on the higher proportions of health practitioners who are not knowledgeable on medication error reporting despite the fact that most of them have already encountered medication error in the entire duration of their practice. It is the responsibility of health practitioners to report any medication errors they encountered. Hence, it is very important that they are all educated and skilled regarding the procedures of reporting. But although they are non-knowledgeable, among the three practitioners, the pharmacists have the highest proportion of knowledgeable respondents. This might be because they know more about drugs and that they are already familiar with adverse drug reaction and medication error reporting programs via the college curriculum and also via the procedures on reporting provided by the Food and Drug Administration.

In terms of their attitude, higher percentage of the total respondents possess unfavorable attitude towards medication error reporting despite the results which showed that most of them are practicing medication error reporting. Attitude of health practitioner is an essential factor to make medication error reporting accepted and practiced throughout the health care system. Having determined that there is a significant difference on the attitude on medication error reporting among the three practitioners, only the pharmacists possess favorable attitude towards medication error reporting.

Despite the result of the survey which showed that the practitioners are non-knowledgeable and are possessing unfavorable attitude towards medication error reporting, the results still showed that the health practitioners are practicing medication error reporting. This might be because it is a professional obligation for them to report any untoward events like medication error. However, as individual respondents, the physicians are the ones who are least practicing medication error reporting.

Some of the demographic factors showed significant relationship with the health practitioner's knowledge and practice on medication error reporting. The knowledge of health practitioners is affected by their age for the reason that as a person gets older he gets the ability and opportunity to gain more information. With more time, there is obviously more room for learning. Another demographic factor that showed a significant relationship with the knowledge of health practitioners on medication error reporting is the frequency of encounter with medication errors. This is because when practitioners encounter medication errors, they recognize their mistakes and become more aware making them more knowledgeable on medication errors. It was also determined that the manner of

reporting of health practitioners directly affects their practice on reporting medication errors.

In general, the development of an efficient medication error reporting system is necessary to improve the delivery of health care service. Proper implementation and orientation to every health practitioners regarding the system of reporting is important to accomplish it appropriately. Different attitudes of health practitioners to medication error reporting require different approaches to encourage them to report medication errors. The combination of right knowledge, attitude, and practices of health practitioners is essential to fully accept medication error reporting in health care thereby providing better patient care.

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